

REMARKS

Pending Claims

Claims 15 and 24 have been amended. Claims 1-14 were canceled by prior amendment without prejudice or disclaimer. No new claims have been added. Accordingly, claims 15-29 remain pending in the application.

Period for Response

As this Amendment has been filed within two months of the mailing date of the final Office Action, in the event that the Advisory Action is not mailed until after the end of the three-month shortened statutory period, then the shortened statutory period will expire on the date that the Advisory Action is mailed.

Claim Objections

Claim 15 was objected to because "that" was misspelled as "than" in line 8. In response, Applicants have amended claim 15 to correct this error.

35 U.S.C. §112, First Paragraph

Claims 15, 17, 19, 20, 21, 24 and 28 stand rejected under 35 USC § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed

invention. In response, Applicants respectfully traverse these rejections, and point out below how each of the limitations in question is supported in the specification and drawings of the application.

Claims 15, 17, 19, 20 and 24

The Office Action asserts that the specification fails to teach "*a management logical unit*". While this term is not specifically present in the specification, it is explicitly defined in the claims, such as in the following excerpt from claim 15:

"a management logical unit as a command device dedicated for coupling control for controlling coupling between the plurality of logical units"

Thus, the management logical unit is defined in the claims as a command device dedicated for coupling control for controlling coupling between the plurality of logical units. For example, the command device is a logical unit dedicated for coupling control, and is distinguished from logical units for reading from and writing to or programmed from and programmed to by a normal host (see, e.g., page 5, line 24-page 6, line 9 of Applicants' specification). The command device is a "control-dedicated logical unit" (see, e.g., page 6, lines 5-6). Therefore, to define the command device as a management logical unit in the claims is not contrary to the provisions of 35 USC 112, first paragraph, since the functions of the command device are discussed throughout the specification and the command device is clearly described as a logical unit used for carrying out management functions for coupling

other logical units (see, e.g., page 5, line 24-page 6, line 2). Accordingly, Applicants respectfully submit that this term is properly present in the claims and fully supported by Applicants' specification. However, if the Examiner would prefer Applicants to use alternative language, the Examiner is encouraged to contact the undersigned by telephone.

Claim 15

"wherein said management logical unit is used to couple one of said logical units with another one of said logical units in response to an instruction received from one of said host computer adapters,"

This limitation finds support, in both the background discussion and the detailed description. For example, using command devices is a method of directly executing coupling operations from a host computer (see, e.g., page 1, lines 4-20). The command device is a "control-dedicated logical unit" (see, e.g., page 6, lines 5-6). The host computer issues commands for performing the coupling operations to the command devices (management logical unit) as data to be written into the external storage system (see, e.g., page 1, lines 20-22). The host computer writes the commands into the dedicated command devices as data, whereas the external storage system processes the data written into the command devices as commands (see, e.g., page 1, line 24-page 2, line 2). Thus, this it is respectfully submitted that this limitation is supported by Applicants' specification.

"wherein said first host computer adapter can command coupling of two logical units in said first group of logical units by using said management logical unit, and cannot command coupling of two logical units in said second group of logical units;

wherein the second host computer adapter can command the coupling of two logical units in said second group of logical units by using said management logical unit, but cannot command the coupling of two logical units in said first group of logical units"

According to these limitations, a first host computer adapter (for example, Adapter WWN-A 120 of FIG. 1) is able to command coupling of two logical units in a first group of logical units by using the management logical unit (command device) (see, e.g., page 1, lines 20-22). The storage system has coupling functions and is capable of copying logical units between the present system and another external storage system (see, e.g., page 1, lines 4-13). These coupling functions include a plurality of coupling operations (see, e.g., see, e.g., page 1, lines 13-14). When LUN security is not in use, command devices that belong to the group of WWN-A, can be used with command devices that belong to WWN-B as their alternatives (see, e.g., page 4, lines 7-9). However, when the LUN security is used, the command devices that belong to WWN-B allow the different group 1: WWN-A devices to disappear from view (see, e.g., page 4, lines 9-12). Therefore, it is not possible to use them as their

alternate command devices (see, e.g., page 4, lines 12-13). In such a case as shown in FIG. 2, LUs 240 and 241 and CMs 230 and 231 are recognized by a host computer 100 (see, e.g., page 10, lines 12-13). When LUN security is used, the CM 230 is capable of operating only the LU 240, and the CM 231 is capable of operating only the LU 241 (see, e.g., page 10, lines 13-16). Accordingly, WWN-A can use command device 230 for coupling operations of logical units in group 1, but not in group 2, and WWN-B can use command device 231 for coupling operations of logical units in group 2, but not in group 1 (see, e.g., page 10, lines 13-16 and FIGS. 1 and 2). Thus, this it is respectfully submitted that these limitations are supported by Applicants' specification.

Claim 21

"issuing the instructions for a coupling operation by the host for directing coupling of one of the first logical units to another of the first logical units"

A first host computer adapter (for example, Adapter WWN-A 120 of FIG. 1) is able to command coupling of two logical units in a first group of logical units by using the management logical unit (command device) (see, e.g., page 1, lines 20-22). Thus, this it is respectfully submitted that this limitation is supported by Applicants' specification.

Claim 24

“wherein the storage system processes the coupling operation in accordance with the instructions written to the command device for coupling one of the first logical units to another one of the first logical units”

The basic function of the command device includes that the command devices are shared logical units exclusively used for communication with the host computer (see, e.g., page 1, lines 23-24). The host computer writes the commands into the dedicated command devices as data, whereas the external storage system processes the data written into the command devices as commands (see, e.g., page 1, line 24 – page 2, line 2). Such coupling-operation instructions made from the host computer is executed by writing the command into their corresponding command devices through an operation application (hereinafter abbreviated as RM) or an operation API (hereinafter abbreviated as RMLIB) on the host computer (see, e.g., page 2, lines 2-7). The host computer is capable of giving instructions for the coupling operations from the command devices to all the logical units lying within the external storage system (see, e.g., page 2, lines 7-9). Thus, this it is respectfully submitted that this limitation is supported by Applicants' specification.

Claim 28

"wherein the command device is a shared logical unit used exclusively for communication with the host computer for controlling coupling operations between logical units"

The basic function of the command device includes that the command devices are shared logical units exclusively used for communication with the host computer (see, e.g., page 1, lines 23-24). The command device is a "control-dedicated logical unit" (see, e.g., page 6, lines 5-6). The host computer writes the commands into the dedicated command devices as data, whereas the external storage system processes the data written into the command devices as commands (see, e.g., page 1, line 24 – page 2, line 2). The host computer is capable of giving instructions for the coupling operations from the command devices to all the logical units lying within the external storage system (see, e.g., page 2, lines 7-9). Accordingly, the command device is a shared logical unit used exclusively for communication with the host computer, and the command device is used for controlling coupling operations between logical units. Thus, this it is respectfully submitted that this limitation is supported by Applicants' specification.

In view of the foregoing clarifications Applicants respectfully request withdrawal of the rejections of claims 15, 17, 19, 20, 21, 24 and 28 under 35 U.S.C. §112, first paragraph.

35 U.S.C. §112, Second Paragraph

Claims 15, 16, 24 and 28 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Applicant has addressed below each of the limitations in question rejected in the Office Action.

Claim 15

"said second group of logical units" in lines 8-9, 16-17 and 19

The second group of logical units is positively recited at lines 6-7 of claim 15, thereby providing antecedent basis for the above recitations. Accordingly, no amendment to the claim is believed to be necessary.

"said first group of logical units" in lines 9, 14-15 and 20-21

The first group of logical units is positively recited at lines 5-6 of claim 15, thereby providing antecedent basis for the above recitations. Accordingly, no amendment to the claim is believed to be necessary.

"one of said logical units" in lines 10-11; *"another one of said logical units"* in line 11; *"two logical units"* in lines 14, 16, 18-19 and 20

These limitations find antecedent basis in the plurality of logical units recited at line 2 of claim 15. Accordingly, no amendment to the claim is believed to be necessary.

"logical units" in lines 33 and 36

This limitation finds antecedent basis in the plurality of logical units recited at line 2 of claim 15. Accordingly, no amendment to the claim is believed to be necessary.

"any logical units" in lines 37-38

This limitation finds antecedent basis in the plurality of logical units recited at line 2 of claim 15. Accordingly, no amendment to the claim is believed to be necessary.

Claim 16

"logical units" in line 2

This limitation finds antecedent basis in the plurality of logical units recited at line 2 of claim 15. Claim 16 depends from claim 15. Accordingly, no amendment to the claim is believed to be necessary.

Claim 24

"extended logical unit information" in line 13

This limitation does not require antecedent basis as it is the first recitation of the extended logical unit information. Accordingly, no amendment to the claim is believed to be necessary.

"virtually" is alleged to be not defined in the claim or specification. This aspect of the invention is discussed in the specification at page 5, lines 20-22. However, as this term is not a necessary part of the claim, Applicants have amended claim 24 to remove this term.

Claim 28

"logical units" in line 3

This limitation finds antecedent basis in the plurality of logical units recited in line 2 of claim 24. Claim 28 depends from claim 24. Accordingly, no amendment to the claim is believed to be necessary.

In view of the foregoing clarifications and the amendment to claim 24, Applicants respectfully request withdrawal of the rejections of claims 15, 16, 24 and 28 under 35 U.S.C. §112, second paragraph.

35 U.S.C. §103(a)

Claims 15-29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ito et al., US Pat. Appl. Pub. No. US 2006/0190696 (hereafter "the Ito application"), in view of Sicola et al., US Pat. No. 6,643,795 (hereafter "Sicola") and further in view of Terao, US Pat. No. 6,604,165 (hereafter "Terao"). In response, Applicant respectfully traverses the rejections, and requests reconsideration and withdrawal of the rejections for the following reasons.

The Ito Application is Disqualified as Prior Art Because of its Filing Date

Applicants note that the Ito application has a filing date of April 21, 2006, which is well after the priority date of the present application, March 28, 2001, and the US filing date of February 26, 2002. A proper reference under 35 USC § 103(a) must first qualify as a reference under one of the provisions of 35 USC § 102. Such is not the case here since the filing date of the Ito application is over four years after the US filing date of the present application.

Further, the Ito application appears on its face to claim partial priority to two distinct applications, namely, US Pat. Appl. No. 10/076,553, filed February 19, 2002, and US Appl. No. 09/561,404, filed April 27, 2000. In particular, on its face, the Ito application is purported to be a continuation-in-part of the disclosures of these two applications. Accordingly, Applicants respectfully submit that it is improper to cite the Ito Application as prior art against the present application for any purposes. Instead,

the Examiner must look to the parent cases that have earlier filing dates than the present application, while also remaining mindful that the provisions of 35 USC § 103(c), as discussed below, appear to apply to the parent cases.

The Ito Application is Disqualified as Prior Art Under 35 USC 103(c)

Even if the Ito application were properly cited as prior art under 35 USC § 102, the Ito application is commonly owned with the present application, falls under the provisions of 35 USC § 103(c), and therefore cannot be used to preclude patentability of the present invention under 35 USC § 103(a). In particular, at the time the present invention was made, both the subject matter of the Ito application and that of the present application were owned by or subject to an obligation of assignment to Hitachi Ltd. of Tokyo, Japan (see, e.g., reel 017925, frame 0895, for the assignment of the Ito application to Hitachi, Ltd., and reel 015957, frame 0252, for the assignment of the present application to Hitachi, Ltd.). Accordingly, as the provisions of 35 USC § 103(c) apply, Ito is disqualified as prior art for any rejections of the claims under 35 USC § 103(a).

Further, it is noted that the Ito application claims priority, in part, back to US Appl. No. 09/561,404 (the '404 application), filed April 27, 2000, now US Pat. No. 6,684,209 (the '209 patent). However, at the time the present invention was made, both the subject matter of the '404 application and that of the present application were owned by or subject to an obligation of assignment to Hitachi Ltd. of Tokyo,

Japan (see, e.g., reel 011152, frame 0767, for the assignment of the '404 application to Hitachi, Ltd., and reel 015957, frame 0252, for the assignment of the present application to Hitachi, Ltd.). Further, Applicants note that the '404 application does not appear to have been published until it issued as the '209 patent on January 27, 2004, well after the US filing date of the present application, February 16, 2002, and therefore would only qualify as a reference under 35 USC § 102(e), if that section were applicable. Accordingly, the '209 patent also is disqualified as prior art according to the provisions of 35 USC § 103(c).

Further, it is noted that the Ito application claims priority, in part, back to US Appl. No. 10/076,533 (the '533 application), filed February 19, 2002, now US Pat. No. 6,779,083 (the '083 patent). However, at the time the present invention was made, both the subject matter of the '533 application and that of the present application were owned by or subject to an obligation of assignment to Hitachi Ltd. of Tokyo, Japan (see, e.g., reel 012603, frame 0631, for the assignment of the '533 application to Hitachi, Ltd., and reel 015957, frame 0252, for the assignment of the present application to Hitachi, Ltd.). Further, Applicants note that the '533 application does not appear to have been published until January 16, 2003, as US Pat. Appl. Pub. 2003/0014600 (the '600 publication), well after the US filing date of the present application, February 16, 2002, and therefore would only qualify as a reference under 35 USC § 102(e), if that section were applicable. Accordingly, the

'083 patent and the '600 publication are also disqualified as prior art according to the provisions of 35 USC § 103(c).

Because the Ito application is the primary reference in all of the rejections of claims 15-29, Applicants respectfully submit that the rejections of these claims under 35 USC § 103(a) are overcome. Accordingly, further discussion of the rejections under 35 USC § 103(a) on their merits is not required, and claims 15-29 are believed to be allowable.

Conclusion

Should the Examiner feel that a telephonic or in-person interview would be useful to advance prosecution of the application, the Examiner is encouraged to contact Applicants' undersigned attorney.

In view of the foregoing amendments and remarks, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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